

ABSTRACT

Methods are provided for making plated through holes usable for inserting and attaching connector probes. In a first method, a curved plated through hole is formed by bonding curved etchable wires to a first substrate, plating the wires with a non-etchable conductive material, encasing the plated wires with a dielectric material to form a second substrate, planing the second substrate to expose the etchable wire, and etching the wires to leave plated through holes. In a second method, wires coated with a first etchable layer are initially bonded to a substrate, a second non-etchable plating layer is then applied over the first layer, and the first layer is etched away leaving plated through holes with wires disposed inside. In a third embodiment, a layer of masking material is initially deposited on a substrate and etched to form holes which are filled with a sacrificial fill material, the masking material is then removed, the fill material plated, grinding is performed to remove some plating to expose the fill material, and the fill material is then etched away leaving plated attachment wells. Probes may be attached to the plated through holes or attachment wells to create resilient spring contacts to form a wafer probe card assembly. A twisted tube plated through hole structure is formed by supporting twisted sacrificial wires coated with the plating material in a substrate, and later etching away the wires.